# InterCAT Technical Working Group Meeting
January 21, 1999
Minutes

*Agenda Review and TWG Activity Summary & December Minutes:* (Paul Zschack)
The meeting agenda and action items from the previous meeting were reviewed. Apologies were also offered to those hoping to hear Gerd Rosenbaum's presentation on a miniature kappa geometry diffractometer. Gerd was unable to attend the meeting.

**Facility Reports**

*APS Facility Update/News*: (Steve Davey)
APS users have been granted authority to use dry shipper packaging (which uses foam to absorb potential fluid leaks) to ship cryo-preserved samples. SBC-CAT worked to get DOT authorization for all users to use dry shippers. Davey emphasized that this privilege does not extend to other facilities; it is applicable only at ANL. An announcement covering details of the provision will be sent out.

The poll regarding opinions on the use of Oxford's cryo-cooler service was sent out after the December 1998 meeting. Davey has not yet received all replies and encouraged the group to respond soon. He briefly discussed the options of either using Mohan's group for the service or renewing the contract with Oxford.

A request for information needed to complete the APS beamline directory was sent to all CATs. CATs were asked to please respond promptly.

Yeldez Amer will be out of the office for an undetermined amount of time. Any questions about Tecknit should be directed to either Bob Ferry, Bob Pfile, or Steve Davey.

*Liquid Nitrogen Distribution Update*: (Bob Ferry)
Ferry reviewed the project checklist for the LN2 distribution system, noting that two major bidders have asked for a one-week extension. Ferry indicated that he hopes to award the contract on March 1. He has started to survey the CATs to determine exactly what each CAT is going to require from the system. Basically, each sector can expect to receive a dewar with 45 lbs. of pressure on the transfer line. CATs requiring a fine degree of pressure control need to plan their system designs now. CATs should anticipate seeing a pressure spike in the dewars when the system is being filled. Fills are expected to take 30 - 45 minutes and will likely occur every 2 - 3 days. CATs may want to consider a buffer dewar for their systems to mitigate pressure fluctuations.

*Other Items*: (B. Ferry)
A survey was done regarding fill-on-fill injections with shutters open. So far, no negative responses have been received (one sector's reply is still out). The use of fill-on-fill is expected to start next week.

A three-day chilled water shutdown was recently conducted. A user wondered if any of the system parameters were changed (e.g., use of new additives). Ferry informed the group that the only change was the addition of a redundant system to cover chilled water service in the event of a failure of the primary system.

**CAT Reports**

*COM-CAT Activity Update*: (Kevin D'Amico)
The COM-CAT beamline is supported by the State of Illinois for the purpose of assisting an industrial client base (including businesses from outside of Illinois). The beamline will have "general purpose" synchrotron research capabilities and will be self-supporting through a fee-for-service set-up. COM-CAT is hoping to expand the "traditional" user base found at the APS. D'Amico, along with Steve Wasserman, have been working closely with various APS groups (e.g., beamline engineering, controls, optics, etc.) to accomplish these goals.

COM-CAT currently has in hand $2M of FY 1998 funding from the state. A total of $8.7M has been designated for the development of the ID line. Funds in the amount of $3.5M are expected from Illinois soon since the contract was recently signed. There is an ongoing effort to develop the customer base for the CAT.

D'Amico showed a diagram of the beamline and discussed plans to construct a standard FOE. The experiment station must be capable of supporting spectroscopy, diffraction, and crystallography experiments. Plans are also under review to construct a small office area adjacent to the beamline to provide privacy to clients. COM-CAT is leaving some space in the sector for the potential future development of a third enclosure. The layout of the hardware in the experiment station has been driven by the anticipation that experiment set ups will likely need to be switched between techniques rapidly. An energy range of up to 20 keV is anticipated (not expected to go below 5 - 6 keV). Diffraction capability of 1.5 Å is expected.

COM-CAT hosted a workshop at the Ninth Users Meeting that was attended by approximately 20 Illinois business representatives (with interest from an additional 5 - 10 people). A contact list has been developed of people interested in demonstration experiments planned for after commissioning. These participants would be comfortable having the demonstration results made public and used as a marketing tool to interest additional businesses.

At this time, enclosures are being installed and a variety of components have been ordered. The utility feeds are completed and the LOM area is done. Future plans call for the installation of the front end and the ID in May 1999, shielding verification in June 1999, and component installation and commissioning through August 1999. The demonstration experiments are tentatively planned for fall 1999.

*SRI-CAT Sector 4 Activity Update*: (George Srajer)
Srajer presented a schematic layout of 4-ID-A, B, C, and D showing the two branched lines, a hard x-ray line in the 3 - 100 keV range and a soft x-ray line in the 500 - 800 eV range. The branch line has been built in sector 2 and will be moved to sector 4. The beamline is intended to be dedicated to the use of polarized light in the study of magnetic materials and has two IDs, a circularly polarized undulator and a plane-polarized undulator A plus optics. The two branches are meant to operate simultaneously and plans call for the use of three small magnets to kick the beam. The core staff includes I. Coulthard, J. Freeland, J. Lang, B. McHargue, and G. Srajer.

Srajer reviewed the major optical components and layout for the hard x-ray line, including a cryo-cooled 3 - 37 keV monochromator [Si(111) or Si(220)], a diamond (111) or (220) phase

retarder, and a doubly focused toroidal mirror. He also presented the parameters for the soft x-ray line (developed by J. Freeland), which utilizes a 12.8-cm elliptically polarized undulator. A variety of scientific techniques will be pursued, including magnetic circular dichroism, magnetic linear dichroism, x-ray resonant magnetic scattering, and magnetic imaging. The FOE has been built. The B station is coming in February and the D station delivery is expected in June.

A test facility (now in the very initial stages) is being built at sector 4 in conjunction with the National High Magnetic Field Laboratory. The facility will have a range of 15-20 tesla with the capacity to work at temperatures down to a couple degrees Kelvin. Additionally, another prominent program is the Beamline Component Testing Facility (BCTF), which will be used to test components for the next generation of front ends.

**News and Other Business**

John Quintana gave a brief presentation on issues discussed at a recent top-up subgroup meeting. The group currently has nine members and is acting as a focal point for the flow of information regarding top-up-related activities. Parties interested in joining the subgroup are urged to contact J. Quintana (jpq@nwu.edu). The group had several suggestions for top-up. One was to schedule testing earlier in the run to limit potential interruption of ongoing experiments. It was felt that the user community should be polled to determine optimal times for conducting studies of top-up mode. Requests and suggestions from the community could potentially be funneled through the subgroup. Studies need to be approached from two directions, keeping in mind the impact on both software and hardware. By keeping shutters open, software can be debugged and the effects of high heat loading can be examined. Fill times could be gradually increased in frequency and incorporated as part of the normal schedule to allow CATs to closely evaluate any effects seen. It was felt that constant time factors should be the primary parameter of concern, not constant level. Beamlines need to take a systematic approach to evaluating top-up mode. Subgroup members will poll the community to what types of test parameters should be employed for the next set of top-up tests. The group would be interested to see the list of experiments planned by the APS. Overall, the group felt that unless top-up is completely transparent, it has the potential to significantly change the day-to-day operation of the facility. This opinion has led to the desire to approach top-up conservatively and to allow time for the user community to carefully evaluate its impact on both hardware and software, and gain operational experience with the new operational mode.

**Next Meeting**

The meeting will be held February 18, 1999, in conference room A1100.

**Action Items**

1. Send out information about use of dry shippers (**S. Davey**).

2. Respond to S. Davey's opinion poll about the Oxford cryo-service proposal (**all CATs**).

2. Provide feedback to S. Davey's request for information for the APS beamline directory (**all CATs**).